Air Resources Board

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April 5, 2006

Mr. Wilson Chu
Marketing and New Business Manager
Johnson Matthey
Diesel Emission Control Systems
380 Lapp Road
Malvern, Pennsylvania 19355

Dear Mr. Chu:

The Air Resources Board (ARB) staff has reviewed the Johnson Matthey application for the Conditional Verification of the Continuously Regenerating Technology (CRT®) diesel particulate filter. Based on the evaluation of the data provided, ARB hereby verifies that the CRT® filter reduces emissions of diesel particulate matter (PM) by 85 percent or greater in stationary prime and emergency generators with engines listed in the enclosure labeled Attachment 1. Additionally, ARB hereby conditionally verifies that the CRT® filter reduces emissions of diesel particulate matter (PM) by 85 percent or greater for use in stationary prime and emergency pumps with engines listed in the enclosure labeled Attachment 1. The CRT® filter is therefore verified as a Level 3 diesel emission control device for generators and conditionally verified as a Level 3 diesel emission control device for pumps when used on diesel engine certified to Tier 1, Tier 2, or Tier 3 with a PM emission rate of 0.4 g/bhp-hr or less, subject to the terms and conditions specified below.

The required emissions and durability testing of the CRT® filter were performed according to the testing protocol "Proposed Test Protocol for Verification Testing of Johnson Matthey's CRT® filter for Stationary Diesel Engines" submitted to ARB on April 4, 2005. The system has completed all required durability testing for generators, including 79 cold starts, with positive results, making the system eligible for verification. The CRT® filter is conditionally verified for stationary prime and emergency pumps. As discussed below, the full approval process for pumps requires field durability testing.

The ARB stationary emergency generators and pumps verification test program for the CRT® filter consists of:

A. Baseline emissions testing;
B. Zero-hour control device emissions testing;
C. Durability testing (0 - 168 hr);
D. Post 168 hr conditional verification emission testing;

E. Durability testing (1865 hr CRT® filter from Snow Mountain generators);
F. Post durability control device emissions testing; and
G. Field testing on a diesel powered pump.

Testing has been completed for the generator verification and pump conditional verification; phase G is required to finish verification for diesel powered pumps. Since all durability testing was conducted on diesel powered generators, an additional 200 hours of field operation is required for the diesel powered pumps. The additional 200 hours of field operation must be completed within three years after receiving conditional verification (Section 2705: Field Demonstration Requirements (b)(1)). When the additional 200 hours of field operation is successfully completed, an extension to the Executive Order for the full verification on pumps can be provided. For the specified time period, conditional verification for pumps is equivalent to verification for the purpose of satisfying the requirements of in-use emission control regulations. If these conditions of verification are not satisfied by the specified time period, the pump conditional verification will automatically terminate.

The emergency and prime generator verification and emergency and prime pump conditional verification is valid provided the operating criteria presented in Table 1 are met. Since there may be significant variations from application to application, Johnson Matthey will review actual operating conditions (duty cycle, baseline emissions, exhaust temperature profiles, and engine backpressure) prior to retrofitting an engine with a CRT® filter to ensure compatibility.

Furthermore, the engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer. Johnson Matthey must install the CRTdm (a backpressure monitor and data logger) on all engines retrofitted with a CRT® filter.

ARB hereby assigns the CRT® filter the designated family name of:

CA/JMI/2005/PM3/N00/ST/DPF01

This identification number should be used in reference to this generator verification and pump conditional verification as part of the system labeling requirement. Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, Johnson Matthey is responsible for honoring their warranty (Section 2707) and conducting in-use compliance testing (Section 2709).

Table 1: Johnson Matthey CRT® Filter Operating Criteria

Parameter	Value
Application	Stationary Emergency Standby or Prime Power Generation or Pumping
Size Range	No restriction
Engine Type	Diesel, with or without turbocharger, certified to 0.4 g/bhp-hr or less of PM
Minimum Exhaust Temperature for Filter Regeneration	The engine must operate at a load level to achieve sufficient exhaust temperature (240° C) for regeneration for 40% of the duty cycle. Operation at lower temperatures is allowed up to 200 consecutive hours, but the CRT® filter may require a maintenance step of accumulated soot burning by operating above 300° C for 5 to 10 hours.
Maximum Consecutive Minutes at Idle	720 minutes
NOx/PM Ratio Requirements	NOx/PM ratio of at least 15 at 300° C or above and 20 at temperatures below 300° C.
Number of Cold Starts Before Regeneration Required	24 cold starts with 30 minute idle sessions
Number of Hours of Operation Before Cleaning of Filter Required	Up to 5000 hours - application specific.
Fuel	California low sulfur diesel with 50ppm sulfur content limit. Biodiesel is not acceptable for this verification.
PM Verification Level	Level 3 Verification: At least 85% reduction of PM.

Should you have any questions or comments, please contact Mr. John Lee, Air Resources Engineer, at (916) 327-5975.

Sincerely,

/s/

Daniel E. Donohoue, Chief
Emission Assessment Branch, SSD

Attachment 1
cc: John Lee, Air Resources Engineer
Technical Analysis Section, SSD